Cisco 3200 Series Wireless and Mobile Routers

The Cisco® 3200 Series Wireless and Mobile routers are rugged Cisco IOS® routers that provide access, mobility, and interoperability across multiple wired and wireless networks. The Cisco 3200 Series has a flexible, compact form factor that is ruggedized to withstand harsh environments. Cisco 3200 Series rugged routers offer secure data, voice, and video communications in mobile and outdoor, embedded networks. For mobile applications, standards-based Mobile IP delivers transparent roaming across multiple wireless networks capable of covering wide geographic areas. The Cisco 3200 Series components can also be placed in customized enclosures or existing outdoor infrastructure to connect proprietary network devices with an IP network.

The Cisco 3200 Series offers public safety, transportation, and defense customers with the following key solution benefits:

- A rugged router with a modular compact form factor, designed for mobile and outdoor, embedded networks
- Standards-based connectivity for a wide range of LAN and WAN wired or wireless links, including4.9 GHz and 802.11b/g wireless capabilities, with upgradeability to future wireless technologies
- Always-on wireless access for vehicle networks with easy mobility through mobile IP regardless of location or movement
- Advanced IP services through standards-based Cisco IOS Software, offering robust network security, reliability, quality of service (QoS), and remote management functions
- Optional rugged enclosure from Cisco for in-vehicle deployments

The Cisco 3200 Series consists of one or more PC104/Plus modules that stack together to form a wireless router configuration. These modular card combinations are either available as card bundles or as complete systems assembled in a Cisco 3200 rugged enclosure. The Cisco 3200 Series router bundles consist of the Cisco 3230 and the Cisco 3270 models. Figure 1 shows the Cisco 3230 card bundle and a Cisco 3230 rugged enclosure bundle. Figure 2 shows the Cisco 3270 router card and a Cisco 3270 rugged enclosure bundle.

Figure 1.   Cisco 3230 Model (photos not to scale)

Cisco 3230 Card Bundle

Cisco Rugged Enclosure
for the Cicso 3230 Router

Figure 2. Cisco 3270 Rugged Router model (photos not to scale)

Cisco 3270 Router Card

Cisco Rugged Enclosure
for the Cisco 3270 Router

The Cisco 3230 models consist of a combination of PC/104+ Moble Interface Cards including the Mobile Access Router Card (MARC), Serial Mobile Interface Card (SMIC), Fast Ethernet Switching Mobile Interface Card (FESMIC) and Wireless Mobile Interface Card (WMIC) options. The Cisco 3230 is offered as card bundles to be placed in 3rd party enclosures or as complete system in the Cisco 3230 rugged enclosure.

The Cisco 3270 models include a larger router card capable of supporting 2 PC/104+ card stacks. The Cisco 3270 provides expanded interface support which includes GE copper, Fiber, USB, and FE ports. The Cisco 3270 router card is offered as a stand-alone router card for embedded applications or as a complete system in the Cisco 3270 rugged enclosure.

The following cards are used with the Cisco 3230 and 3270 models:

- SMIC-Up to 4 synchronous/asynchronous serial ports
- FESMIC-Up to 4 Fast Ethernet ports
- 2.4 GHz WMIC-802.11b/g bridge or access-point
- 4.9 GHz WMIC-4.9 GHz bridge or access-point

To learn more about the Cisco 3270, see the Cisco 3270 datasheet:
http://www.cisco.com/en/US/products/hw/routers/ps272/products_data_sheet0900aecd804c207b.html

Cisco 3200 Rugged Enclosures

Customers can work with Systems Integrators on enclosure solutions or they can choose an option from Cisco. Cisco provides a rugged enclosure for the Cisco 3230 and Cisco 3270 models which addresses specific mobility needs for the public safety, transportation, and defense markets. Manufactured by Cisco, this rugged, sealed enclosure is designed for use in vehicles, trains, or airplanes. The rugged enclosure is designed and tested to withstand extended temperatures, high altitude, shock, vibration, and exposure to damp, wet or dusty environments. The Cisco 3200 Series rugged enclosures provide:

- A rugged design meeting a wide range of environmental specifications, including MIL-STD-810F, MIL-STD-461E, NEMA-4, and SAE (J1211 and J1455) standards
- A sealed enclosure that uses conductive cooling without the use of internal fans
- A modular enclosure by offering expansion slots for future growth
- A Cisco Rugged Enclosure for the Cisco 3230 and 3270 enclosure bundles

Mobile Networks

The Cisco 3200 Series Wireless and Mobile router offers a wireless, ruggedized, high-performance router designed to extend the IP network from wired premises out to mobile infrastructure including vehicles, trains, planes, and ships. The Cisco 3200 Series routers create a moble network to establish a secure IP network for remote devices in a moving or stationary vehicle. Remote users can exchange voice, video, and data communications with a central site and securely access corporate resources in real-time. The Cisco 3200 Series forms a wireless network in and around a mobile network to allow users to roam while still maintaining secure broadband connection.

To address always-on, mobile access for mission-critical applications, the Cisco 3200 Series routers use standards-based mobile IP features in Cisco IOS Software to allow the mobile node or network to stay connected as it moves from one wireless network to another. Transition to different wireless networks is transparent to the users and devices (such as laptops, personal digital assistants [PDAs], and surveillance cameras), and applications maintain continuous connectivity without the user having to manually intervene as WAN links change. In addition to allowing a single node or device to stay connected, the Cisco 3200 Series routers allow an entire mobile network or subnet to stay connected.

Embedded Networks

Utility and energy companies are discovering the benefits of bridging proprietary networks with IP networks. The challenge arises when these proprietary networks are located in remote sites, without temperature controlled environments. With industrial grade components, the Cisco 3200 Series is an ideal platform for connecting these disparate networks on to an IP network. The Cisco 3200 Series provides standard ethernet, serial, or wireless interfaces used to connect isolated networks or devices such as utility substations, traffic signal controllers, and video cameras on to an IP network.

Network Security, Reliability, and Manageability

Because the Cisco 3200 Series routers run Cisco IOS Software, they provide capabilities for network security, manageability, and scalability. Cisco IOS Software offers integrated network security features including authorization and authentication, stateful firewall, intrusion detection, and Triple Digital Encryption Standard (3DES) or Advanced Encryption Standard (AES) encryption for VPNs. Remote management capabilities give network managers visibility and control to the remote network, including devices connected to the router. Powerful debug and troubleshooting commands allow network managers to quickly isolate network problems and securely make changes to network configurations.

Primary Features and Benefits

Table 1 gives the features and benefits of the Cisco 3200 Series routers.

Table 1.   Features and Benefits of Cisco 3200 Series Routers

Feature	Benefits
Ruggedized Router in a Flexible and Compact Hardware Design	
Single Platform for Multiple Embedded Hardware Solutions	• Offers hardware architecture capable of being embedded in different system designs. • Allows for designs in unique environments for mobile or fixed outdoor networks.
Industry-Standard Hardware Design	• PC/104-Plus architecture allows for the use of off-the-shelf third-party components for use with the Cisco 3200 Series

Feature	Benefits
Industrial-Grade Components	• Extended temperature ranges of -40º to +85ºC (Temperature ranges for completed solutions are dependent on hardware configuration variables, including enclosures and third party components.) • Meets MIL-STD-810F and SAE standards.
Lightweight, Compact Size with Low Power Consumption	• Provides flexibility to be deployed in many different environments where space, heat dissipation, and low power consumption are critical factors.
Configurable Hardware Design with Stackable Interface or Component Cards	• The design allows for added functions by stacking Cisco interface or third-party component cards into a hardware configuration. • Third-party cards can give added use to provide various LAN or WAN functions, including security, computing, global positioning system (GPS), and cellular connectivity.
Multiple WAN and LAN Connections, Including Integrated 4.9 GHz and 802.11b/g	
Multiple Faster Ethernet and Serial Interfaces	• Multiple LAN and WAN devices can be connected to standard 10/100 Ethernet or serial interfaces. • The Fast Ethernet switched mobile interface card (FESMIC) and serial mobile interface card (SMIC) provide additional ports as needed. • WAN links can use external devices such as cellular or satellite modems or integrated 4.9 GHz and 802.11 bridges. • LAN devices can be PCs, video cameras, DVRs, chemical sensors, printers, etc. or an integrated 4.9 GHz and 802.11b/g access point.
Integrated 4.9 GHz Capabilities	• 4.9 GHz WMICs can be configured as a bridge for WAN connectivity or as access points for wireless LAN connectivity. • Licensed technology eliminates interference from unauthorized sources. • High-power mask for all power output levels offers high fidelity signal that reduces cross channel interference.
Integrated 802.11 b/g Capabilities	• Wireless mobile interface cards (WMICs) eliminate the need for external 802.11 LAN and WAN devices. • WMICs can be configured as 802.11 bridges for WAN connectivity or as access points for wireless LAN connectivity.
Interoperability and Upgradeability	• Connectivity and interoperability for a wide range of LAN and WAN wired and wireless applications and network technologies. • Upgradeability to future wireless technologies for reduced cost of ownership.
Seamless Roaming Between Wireless Networks	
Mobile IP Features in Cisco IOS Software	• Mobile IP offers seamless roaming for mobile networks, establishing a transparent internet connection regardless of location or movement. • Mission-critical applications stay connected even when roaming between networks. • Assigned IP address to the home network is maintained in private or public networks.
Mobile Networks Features in Cisco IOS Software	• Ability to allow an entire subnet or vehicle network to maintain connectivity to the home network while roaming.
Ability to Use Any Type of Wireless Technology	• Allows users to use the best wireless technology or network available.
Advanced IP Services in Standards-Based Cisco IOS Software	
Advanced Security Features	• Authorization and authentication determines who and what devices are allowed to use the network. • Firewall protection provides perimeter security when using public networks. • 3DES and AES encryption provides for secure VPNs when transmitting and receiving data over public networks. • Intrusion detection monitors potential malicious activity within the network. • Layer 2 wireless LAN security authorizes who is allowed to gain access to the 4.9 GHz and 802.11 wireless LAN.
QoS Features	• Gives traffic precedence to delay-sensitive or prioritized applications. • Facilitates low-latency routing of delay-sensitive applications such as streaming video.
IP Multicast	• Allows efficient broadcast of data or video for increased situational awareness, multiuser communications, or surveillance applications.
Cisco IOS Software Management	• Enables remote management and monitoring with Simple Network Management Protocol (SNMP), Telnet, or HTTP, and enables local management through console port. • Supports intuitive network management tools such as CiscoWorks for Windows and HP OpenView.

Cisco 3200 Series Router Model Comparison

Feature Availability Table

Table 4 gives the features of Cisco IOS Software.

Table 2.   Cisco IOS Software Features

Features	Enterprise Base Image	Advanced Enterprise Image
Routing and Bridging		
Up to 32 VLANs Supported Per System	X	X
IPv4	X	X
IPv6	–	X
Point-To-Point Protocol (PPP), Frame Relay, X.25, XOT, High-Level Data Link Control (HDLC), Telnet, Asynchronous Tunneling, Dial-On-Demand Routing (DDR), PPP Over Frame Relay	X	X
802.11 and 4.9 GHz Features—Refer to separate Cisco 3200 WMIC data sheets		
Routing Protocols		
Routing Information Protocol (RIP), Ripv2, Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP)-IP, Cisco Discovery Protocol, IP Policy Routing, IP Multicast Protocol Independent Multicast (PIM) Versions 1 and 2, Internet Group Management Protocol (IGMP) Versions 1 And 2, IP Multicast Load Splitting, Cisco Group Management Protocol (GMP)	X	X
Mobility Features		
Mobile IP, Mobile Networks in Cisco IOS Software		X
Cisco Mobile Networks Network Address Translation (NAT) Traversal over Mobile IP		X
Home Agent And Mobile Router Redundancy, Mobile Router Preferred Interfaces, Mobile Router Reverse Tunneling, Mobile Router Asymmetric Links, Mobile Router Static and Dynamic Networks, Static Co-Located Care of Address, Authentication, Authorization, and Accounting (AAA) Server And Mobile IP		X
MobileIP tunnel templates support, allowing configuration of IP Multicast and IPsec on MobileIP tunnels		X
MobileIP foreign agent local routing optimization		X
Security		
Route and Router Authentication, Password Authentication Protocol (PAP), Challenge Handshake Authentication Protocol (CHAP), Microsoft CHAP (MS-CHAP) Local Password, IP Basic and Extended Access Lists, and Time-Based Access Control Lists	X	X
Stateful Inspection Firewall	–	X
Firewall Intrusion Detection System	–	X
Port-To-Application Mapping	–	X
Generic Routing Encapsulation (GRE)	X	X
IP Security (IPSec)	–	X
Easy VPN Version 4.1 for client and server		X
Tunnel Endpoint Discovery	–	X
Secure Shell (SSH) Protocol Client And Server Version 1.5		X
Fast Switching, Cisco Express Forwarding, Process Switching, STAC Compression, Routing Table Protocol (RTP) Header Compression	X	X
Management		
SNMP Versions 2 and 3, Telnet, Console Port, RADIUS, TACACS+, Cisco Service Assurance Agent, Syslog, Response Time Reporter, Network Time Protocol (NTP) Client, Trivial File Transfer Protocol (TFTP) Client and Server, Dynamic Host Configuration Protocol (DHCP) Client and Server, DHCP Relay, Hot Standby Router Protocol (HSRP)	X	X
TCL script support	X	X
Address Conservation		

Features	Enterprise Base Image	Advanced Enterprise Image
Network Address Translation (NAT) Many to One (Port Address Translation [PAT]), NAT Many to Many (Multi-NAT), DHCP Client Address Negotiation, and Easy IP Phase I	X	X
QoS		
Generic Traffic Shaping, Class-Based Ethernet Matching and Mobile Access Routing (802.1p CoS), Committed Access Rate, Flow-Based Weighted Random Early Detection (WRED), Low-Latency Queuing, Priority Queuing, Weighted Fair Queuing, Link Fragmentation and Interleaving (LFI), Dial Backup, Dialer Profiles, Dialer Idle Timeout, Dial on Demand	X	X
Class-Based Weighted Fair Queuing, Traffic Policing Resource Reservation Protocol (RSVP)	–	X
802.1 q VLAN trunking support		X

Product Specifications

Table 5 gives the physical dimensions of the Cisco 3200 Series modules and enclosures.

Table 3.   Cisco 3230 Router Dimensions

Feature	Description
Card Dimensions	• MARC, SMIC, FESMIC, WMIC and 4.9 GHz WMIC • Height dimension includes component side height, board height, and shroud height on solder side. • Height: 23.8 mm (0.937 in.) • Width: 95.89 mm (3.775 in.) • Depth: 90.17 mm (3.550 in.)
Card Weights (without thermal plates)	**Weight** • MARC: 0.091 kg (0.21 lb) • SMIC: 0.094 kg (0.21 lb) • FESMIC: 0.103 kg (0.23 lb) • 2.4 GHz WMIC: 0.102 kg (0.22 lb) • 4.9 GHz WMIC: 0.094 kg (0.21 lb)
Cisco 3230 Rugged Enclosure	• Height: 14.99 cm (5.9 in.) • Width: 17.27 cm (6.8 in.) • Depth: 20.32 cm (8.0 in.) • Weight: 6.441 kg (14.2 lb)

Note: The Cisco3251MARC is the same router card used in the Cisco 3230 card and enclosure bundles.

Table 6 gives the physical dimensions of the Cisco 3270 Series Router.

Table 4.   Cisco 3270 Router Dimensions

Feature	Feature Description
Card dimensions (Cisco 3270)	Dimensions and weight with thermal plates: • Height: 0.93 in. (23.6 mm) • Width: 5.8 in. (147.3 mm) • Depth: 10.23 in. (259.8 mm) • Weight: 2.0 lb (0.9 kg)
Extended rugged enclosure for the Cisco 3270 Router	• Designed to store the Cisco 3270 Card and two stacks of PC/104-Plus-compliant cards • Height: 5.9 in. (149.8 mm) • Width: 6.8 in. (172.2 mm) • Depth: 16.4 in. (416.6 mm) (for Cisco 3270 fiber-optic model) • Weight: 18.9 lb (8.6 kg) (enclosure with Cisco 3270 Router, MRPC, SMIC, FESMIC, and 3 WMICs) The Cisco 3270 Series Rugged Enclosure I/O end cap supports the following 7-card configuration: Cisco 3270 Router, SMIC, FESMIC, MRPC, and 3 WMICs. The extended enclosure includes room for up to 2 PC/104-Plus card stacks. The Cisco 3270 consumes two

slots. An additional MRPC card is required if PC/104-Plus cards are placed in the second stack.

Ordering Information

For more information about ordering Cisco 3200 Wireless and Mobile Router solutions, visit the Cisco 3200 Ordering Guide at the following URL:

http://www.cisco.com/en/US/products/hw/routers/ps272/prod_brochure0900aecd803fabbf.html

To learn more about custom solutions that embed the Cisco 3200 Series, please visit http://www.cisco.com/go/3200.

Service and Support

Cisco offers a wide range of services programs to accelerate customer success. These innovative services programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Cisco services help you protect your network investment, optimize network operations, and prepare the network for new applications to extend network intelligence and the power of your business. For more information about Cisco services, refer to Cisco Technical Support Services or Cisco Advanced Services.

For More Information

For more information about the Cisco 3200 Series wireless and mobile routers, visit http://www.cisco.com/go/3200 or contact your local Cisco account representative.